Release notes for ENDF/B Development photoat-045_Rh_000 evaluation

October 13, 2016

- checkr   Warnings:

  1. A previous error halted parsing of the current section
     MAT=4500, MF= 1, MT=451 (1): Parsing stopped

     ```
     ERROR(S) FOUND IN MAT=4500, MF= 1, MT=451
         SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER     158 TO     185
     ```

- checkr   Errors:

  1. A variable is outside the allowed ENDF range
     MAT=4500, MF= 1, MT=451 (0): Variable range

     ```
     ERROR(S) FOUND IN MAT=4500, MF= 1, MT=451
         MOD =    3 OUT OF RANGE    0 -    1          RECORD NUMBER    158
     ```

  2. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4500, MF=23, MT=501 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4500, MF=23, MT=501
         SECTION 23/501 NOT IN DIRECTORY              RECORD NUMBER     187
     ```

  3. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4500, MF=23, MT=502 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4500, MF=23, MT=502
         SECTION 23/502 NOT IN DIRECTORY              RECORD NUMBER    1027
     ```

  4. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4500, MF=23, MT=504 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4500, MF=23, MT=504
         SECTION 23/504 NOT IN DIRECTORY              RECORD NUMBER    1402
     ```

  5. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4500, MF=23, MT=515 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4500, MF=23, MT=515
         SECTION 23/515 NOT IN DIRECTORY              RECORD NUMBER    1443
     ```

  6. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4500, MF=23, MT=516 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4500, MF=23, MT=516
         SECTION 23/516 NOT IN DIRECTORY              RECORD NUMBER    1477
     ```

  7. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4500, MF=23, MT=517 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=517
     SECTION 23/517 NOT IN DIRECTORY                 RECORD NUMBER    1529
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=4500, MF=23, MT=522 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=522
     SECTION 23/522 NOT IN DIRECTORY                 RECORD NUMBER    1569
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=4500, MF=23, MT=534 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=534
     SECTION 23/534 NOT IN DIRECTORY                 RECORD NUMBER    1975
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=23, MT=535 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=535
     SECTION 23/535 NOT IN DIRECTORY                 RECORD NUMBER    1998
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=23, MT=536 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=536
     SECTION 23/536 NOT IN DIRECTORY                 RECORD NUMBER    2024
```

12. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=23, MT=537 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=537
     SECTION 23/537 NOT IN DIRECTORY                 RECORD NUMBER    2051
```

13. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=23, MT=538 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=538
     SECTION 23/538 NOT IN DIRECTORY                 RECORD NUMBER    2079
```

14. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=23, MT=539 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=4500, MF=23, MT=539
     SECTION 23/539 NOT IN DIRECTORY                 RECORD NUMBER    2108
```

15. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=23, MT=540 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=540
       SECTION 23/540 NOT IN DIRECTORY                    RECORD NUMBER    2148
```

16. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=541$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=541
       SECTION 23/541 NOT IN DIRECTORY                    RECORD NUMBER    2185
```

17. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=542$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=542
       SECTION 23/542 NOT IN DIRECTORY                    RECORD NUMBER    2238
```

18. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=543$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=543
       SECTION 23/543 NOT IN DIRECTORY                    RECORD NUMBER    2292
```

19. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=544$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=544
       SECTION 23/544 NOT IN DIRECTORY                    RECORD NUMBER    2328
```

20. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=545$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=545
       SECTION 23/545 NOT IN DIRECTORY                    RECORD NUMBER    2374
```

21. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=546$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=546
       SECTION 23/546 NOT IN DIRECTORY                    RECORD NUMBER    2421
```

22. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=547$ (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4500, MF=23, MT=547
       SECTION 23/547 NOT IN DIRECTORY                    RECORD NUMBER    2493
```

23. Missing a section in directory so your directory is messed up. This error will break everything else
$MAT=4500$, $MF=23$, $MT=550$ (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4500, MF=23, MT=550
            SECTION 23/550 NOT IN DIRECTORY                    RECORD NUMBER    2562
```

24. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=27, MT=502 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4500, MF=27, MT=502
            SECTION 27/502 NOT IN DIRECTORY                    RECORD NUMBER    2622
```

25. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=27, MT=504 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4500, MF=27, MT=504
            SECTION 27/504 NOT IN DIRECTORY                    RECORD NUMBER    2674
```

26. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=27, MT=505 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4500, MF=27, MT=505
            SECTION 27/505 NOT IN DIRECTORY                    RECORD NUMBER    2727
```

27. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4500, MF=27, MT=506 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4500, MF=27, MT=506
            SECTION 27/506 NOT IN DIRECTORY                    RECORD NUMBER    2876
```

- `fudge-4.0` Warnings:

  1. generic warning message
     reaction label 0: Rh + gamma [coherent] / Product: gamma (Error # 0): Warning

     ```
     WARNING: coherentScattering is not a valid distribution component for 2-body reaction
     ```

  2. FIXME: Generic fudge unimplemented message
     reaction label 0: Rh + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)

     ```
     WARNING: Checking not yet implemented for pointwise type data
     ```

  3. generic warning message
     reaction label 1: Rh + gamma [incoherent] / Product: gamma (Error # 0): Warning

     ```
     WARNING: incoherentScattering is not a valid distribution component for 2-body reaction
     ```

  4. FIXME: Generic fudge unimplemented message
     reaction label 1: Rh + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)

     ```
     WARNING: Checking not yet implemented for piecewise type data
     ```

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5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 19: total (Error # 0): Sumrule

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 99.98%
```

6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 21: photoelectric absorption (Error # 0): Sumrule

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 95.13%
```

- `fudge-4.0` Errors:

  1. Calculated and tabulated thresholds don't agree
  reaction label 0: Rh + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
  ```

  2. 2-body reaction not in center-of-mass frame
  reaction label 0: Rh + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM

  ```
  WARNING: 2-body reaction not in center-of-mass frame!
  ```

  3. Calculated and tabulated thresholds don't agree
  reaction label 1: Rh + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
  ```

  4. 2-body reaction not in center-of-mass frame
  reaction label 1: Rh + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM

  ```
  WARNING: 2-body reaction not in center-of-mass frame!
  ```

  5. Energy range of data set does not match cross section range
  reaction label 1: Rh + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)

  ```
  WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)
  ```

  6. Calculated and tabulated thresholds don't agree
  reaction label 2: e- + e+ + Rh [electron field] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!
  ```

  7. Calculated and tabulated thresholds don't agree
  reaction label 3: e- + e+ + Rh [nuclear field] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
  ```

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8. Calculated and tabulated thresholds don't agree
reaction label 4: e- + Rh1s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 23191. eV!
```

9. Calculated and tabulated thresholds don't agree
reaction label 5: e- + Rh2s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3391.2 eV!
```

10. Calculated and tabulated thresholds don't agree
reaction label 6: e- + Rh2p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3151.5 eV!
```

11. Calculated and tabulated thresholds don't agree
reaction label 7: e- + Rh2p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3004.5 eV!
```

12. Calculated and tabulated thresholds don't agree
reaction label 8: e- + Rh3s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 615.95 eV!
```

13. Calculated and tabulated thresholds don't agree
reaction label 9: e- + Rh3p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 520.15 eV!
```

14. Calculated and tabulated thresholds don't agree
reaction label 10: e- + Rh3p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 494.66 eV!
```

15. Calculated and tabulated thresholds don't agree
reaction label 11: e- + Rh3d3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 323.03 eV!
```

16. Calculated and tabulated thresholds don't agree
reaction label 12: e- + Rh3d5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 317.96 eV!
```

17. Calculated and tabulated thresholds don't agree
reaction label 13: e- + Rh4s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 88.52 eV!
```

18. Calculated and tabulated thresholds don't agree
reaction label 14: e- + Rh4p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 58.84 eV!
```

19. Calculated and tabulated thresholds don't agree
reaction label 15: e- + Rh4p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 54.78 eV!
```

20. Calculated and tabulated thresholds don't agree
reaction label 16: e- + Rh4d3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 10.24 eV!
```

21. Calculated and tabulated thresholds don't agree
reaction label 17: e- + Rh4d5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 9.81 eV!
```

22. Calculated and tabulated thresholds don't agree
reaction label 18: e- + Rh5s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.56 eV!
```

23. Calculated and tabulated thresholds don't agree
summedReaction label 19: total / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
```

24. Calculated and tabulated thresholds don't agree
summedReaction label 20: pair product / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
```

25. Calculated and tabulated thresholds don't agree
summedReaction label 21: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.56 eV!
```

- `xsectplotter` Warnings:

  1. Encountered runtime warning in xsectplotter or Fudge or matplotlib
     Error: RuntimeWarning

     ```
     stderr while processing crossSection

     /usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: Runtime
     ... [3 more lines]
     ```